Epitomes

Important Advances in Clinical Medicine

Urology

The Council on Scientific Affairs of the California Medical Association presents the following inventory of items of progress in urology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, researchers, and scholars to stay abreast of these items of progress in urology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Urology of the California Medical Association, and the summaries were prepared under its direction.

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Management of Benign Prostatic Hyperplasia

SURGICAL THERAPY FOR benign prostatic hyperplasia has typically been done through either open enucleation or transurethral resection or incision of the prostate. The choice between the various procedures is usually based on the size and configuration of the prostate. In the United States, 90% of prostatectomies are done transurethrally, and about 400,000 transurethral resections were done in 1992. The procedure is considered relatively free of life-threatening complications, and in most patients (80%), relief of obstructive symptoms is achieved. This procedure requires anesthesia and usually a three-day hospital stay; important problems such as bleeding can occur. Alternative forms of interventional therapy are being investigated, with the goals to maintain the efficiency of transurethral surgery as a one-time treatment while lowering the invasiveness and the cost.

Interventional treatment alternatives include balloon dilation, prostatic stents, microwave heating, and laser ablation. Balloon dilation of the prostate came into vogue five or six years ago. With this technique, a balloon catheter is passed through the urethra and the balloon inflated to at least 30 mm of mercury and 90-F catheter size in the prostatic fossa. The procedure is usually done under regional anesthesia, often as an outpatient procedure. An indwelling catheter is often left in for 24 to 48 hours. The technique gives reasonable short-term relief in selected patients, but long-term studies show diminishing effectiveness after 12 to 24 months. Prostatic stents are spiral springs made of stainless steel or titanium that are placed under anesthesia in the prostatic fossa and the prostatic urethra expanded to a diameter as large as a 42-F catheter. Patients can typically be discharged the day of the procedure or the next morning without a catheter. The most common complaint afterwards has been a feeling of irritation by the presence of the stent. Urethral damage and proximal migration or epithelialization may occur in 20% to 30% of patients, and the stent may need to be removed. Prostatic stents are not currently approved by the Food and Drug Administration (FDA), but have been used in Europe for the past few years.

Microwave heating of the prostate has been explored in this country since 1986. A catheter is placed transurethrally into the prostatic fossa, and microwave antennae are used to heat the surrounding prostate tissue to a minimum of 45°C without anesthesia. Heating causes fibrosis and retraction of the surrounding tissue. This can be done in the office as an outpatient procedure. The technique, although widely used in Europe and Canada, is available in the United States only at selected centers and has not been approved by the FDA. Results are comparable or superior to those of medical agents, but are less than those of transurethral prostatic resection; they have held up over the seven years that this therapy has been studied.

Three types of laser techniques have been used to treat benign prostatic hyperplasia. Prostatic tissue is visualized endoscopically or by ultrasound imaging. All use the neodymium:yttrium-aluminum-garnet wavelength as an energy source. The principal differences have been in the method of energy delivery and technique of therapy. The most common type of delivery system uses a metal-tip reflector to reflect laser energy into the prostate. In this technique the prostate is coagulated at 40 to 60 W laser power for 60 to 90 seconds in a noncontact mode to the four quadrants of the prostate. The technique produces

coagulative necrosis of the adenoma and tissue absorption, which occurs over a few weeks to a few months. The disadvantage of the technique is that metal-tip reflector fibers cannot be used in a contact mode because tissue will adhere to the metal reflector, causing excessive heat buildup and damage to the fiber. The second technique involves a sapphire-tip contact laser fiber that relies on the laser energy to heat the tip, which is then used to coagulate and evaporate the tissue. The tip, being small, can make contact with only a certain amount of tissue. This technique is time-consuming and therefore more useful for prostatic incision than for evaporation. A third technique uses a free beam, quartz-tip fiber in a contact mode to enhance evaporation. Fibers using quartz-tip reflectors are amenable to contact evaporation because quartz has a melting point close to 900°C.

All three techniques in preliminary follow-up studies show improvements in symptom scores and urinary flow that are comparable to conventional transurethral resection. The principal advantages of laser ablation include the lack of bleeding (it can be done on patients taking warfarin sodium), a lack of fluid absorption (it can be done on high-risk patients), and its ambulatory nature (it saves hospital costs). Because no tissue is removed for histologic examination, incidental or stage A cancer of the prostate cannot be detected. Current instruments and techniques are still evolving. Safety and long-term efficacy are still unknown.

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Vasectomy and Prostate Cancer

CONCERNS HAVE BEEN RAISED recently about a possible increased incidence of prostate cancer in men who have had a vasectomy. A retrospective study of 14,607 husbands of nurses and 14,607 age-matched controls revealed that the relative risk of prostate cancer developing in men who had undergone a vasectomy was 1.56 (95% confidence interval [CI] 1.03 to 2.37; $P = .04$). A second prospective study evaluated 10,055 male health care professionals who had had a vasectomy and 37,800 who had not. The relative risk of prostate cancer developing in the men who had had a vasectomy was 1.61 (CI 1.25 to 2.21; $P < .01$). Because 50 to 60 million men worldwide have had a vasectomy and prostate cancer occurs in 1 of 11 American men, any real association between vasectomy and prostate cancer would be of great concern. Although these studies were well-done epidemiologic investigations, the association is weak (although statistically significant) and is not convincing. This weak association could be due to chance or to bias. The most likely would be a selection bias because men who have undergone a vasectomy, particularly in the era when these particular men had their vasectomies, may be more likely to seek sophisticated medical care, be evaluated by a urologist, and have an early diagnosis of prostate cancer. Thus, unmeasured confounding could explain this weak association.

The possible relationship between vasectomy and prostate cancer has to be viewed with some skepticism because two other studies, one of which had long-term follow-up, did not find any effect. In addition, there is no biologically plausible explanation for a relationship between a vasectomy and prostate cancer. In view of the weak epidemiologic association, the lack of consistency with other cohort studies, and the absence of a logical biologic mechanism, the data are too preliminary to suggest any change in the current policy regarding vasectomy.

Epidemiologic studies (as yet unpublished) have shown no evidence of a link between prostate cancer and vasectomy. In a follow-up of a previously published study, a relative risk of 1.1 (CI 0.5 to 2.4) was documented; 15 years after the vasectomy, the relative risk was 0.8. In a case-control study with 1,000 cases diagnosed between 1986 and 1989 and 1,300 controls, the relative risk was 1.2 (CI 0.8 to 1.7). There was no increased risk with time after the vasectomy or with increased age at the time of vasectomy. A third study examined 2,351 men who had had a vasectomy and an equal number of controls. A total of 127 cases of prostate cancer were found in the men with a vasectomy and the controls more than 20 years after the procedure, compared with only 53 cases of prostate cancer more than 20 years after a vasectomy in other studies. The relative risk was 1.1 (CI 0.8 to 1.3) with no increased relative risk at 20 or 30 years after vasectomy.

Results were recently reported of digital rectal examinations and prostate-specific antigen (PSA) tests done on 35,000 men, 8,000 of whom had had a vasectomy, during Prostate Cancer Awareness Week. There was no difference between the frequency of abnormalities found on digital rectal examination or positive PSA tests for any age group between men with and those without a vasectomy. In view of the new data and the problems with the original studies, vasectomy should continue to be offered as a form of male sterilization as long as patients requesting it are informed of the published studies and make their own decision. An actual association between vasectomy and prostate cancer is unlikely. Men who have had a vasectomy should be screened annually with a digital rectal examination and PSA test after the age of 50. This is the same recommendation that the American Urologic Association and the National Cancer Association have made for all men.

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